MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2015 / 2016

PCO 0165 – INTRODUCTION TO COMPUTER ARCHITECTURE AND OPERATING SYSTEM

(Foundation in Information Technology)

7 MARCH 2016
2.30 p.m. - 4.30 p.m.
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of 3 pages (excluding the cover page) with 6 questions only.

2. Attempt **FIVE** out of **SIX** questions. All questions carry equal marks and the distribution of the marks for each question is given.

3. Please write all your answers in the Answer Booklet provided.

Instructions: Attempt **FIVE** out of **SIX** questions. Write your answers in the Answer Booklet.

QUESTION 1 [10 Marks]

a. Central processing unit (CPU) is the most interesting and in some ways the most complex component in the computer. List and explain briefly the **FOUR (4)** major structural components of CPU.

(4 marks)

b. Describe **TWO (2)** characteristics of the third generation of a computer.

(2 marks)

c. Microprocessors are classified by the design of their semiconductor technology. Explain briefly the difference between transistor-transistor logic (TTL) compared to complementary metal oxide semiconductor (CMOS).

(2 marks)

d. State **TWO (2)** features of the Intel Itanium.

(2 marks)

QUESTION 2 [10 Marks]

a. Explain the importance of word size in computer system.

(2 marks)

b. Convert the following binary numbers to decimal equivalents. Show computation steps.
   i. 10001111.101_2
   ii. 11101011.011_2

(3 marks)

c. Convert the following hexadecimal notation to their binary equivalents. Show computation steps.
   i. $67E.CF_{16}$
   ii. $BD3.88_{16}$

(3 marks)

d. Convert the decimal number 1010_{10} notation to their hexadecimal equivalents. Show computation steps.

(2 marks)

QUESTION 3 [10 Marks]

a. Assume that you have an AND gate with three inputs, X, Y and Z. Determine the output (E) for the following questions.
   i. X = 1, Y = 0, Z = 0

Continued ...

ii. X = 0, Y = 1, Z = 0

(2 marks)

b. Calculate the subtraction arithmetic operation of the following unsigned binary numbers. Show computation steps.
   i. 01101011 - 00110101
   ii. 11101011 - 00110101

(3 marks)

c. Solve the following addition operation using the two's complement addition in 5-bit for signed integer. Show computation steps.
   i. 6 + (- 4)
   ii. (-3) + (8)

(3 marks)

d. The 8085 microprocessor has five different types of addressing mode. What is direct addressing mode? Give one example of computer instruction that uses this mode and explain it.

(2 marks)

QUESTION 4 [10 Marks]

a. List **TWO (2)** characteristics of CISC computer.

(2 marks)

b. What is the function of accumulator in assembly language of 8085 microprocessor?

(2 marks)

c. Explain the meaning of the following assembly language instructions code.
   i. LXI H, 4000H
   ii. MVI M, 45H

(2 marks)

d. Let the memory location 1500H = 80H and 1501H = 90H. Write an assembly language to exchange the contents of the memory locations 1500H and 1501H.

(4 marks)

QUESTION 5 [10 Marks]

a. Briefly explain what is multiprocessing operating system.

(2 marks)

b. In third generation of operating system, one of the main highlights was time-sharing. Briefly explain what is time-sharing.

(2 marks)

Continued ...

c. What is shell in operating system? Give **TWO (2)** examples of shell.

(3 marks)

d. In operating system, storage refers to primary storage (main memory), secondary memory (hard disk, tapes, CDs). List **THREE (3)** activities involve in storage management as one of the functions of an operating system.

(3 marks)

QUESTION 6 [10 Marks]

a. Briefly discuss the functions of the following utility programs.
   i. File Explorer
   ii. Backup utility

(4 marks)

b. Describe the function of resource monitor tool in Windows operating system.

(2 marks)

c. Explain briefly the **TWO (2)** types of view of a file in file system of operating system.

(2 marks)

d. Information is kept in files that are located in secondary storage. There are many ways to access this information which usually depend on an application. What is the difference between sequential access and direct access in a file access method?

(2 marks)

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